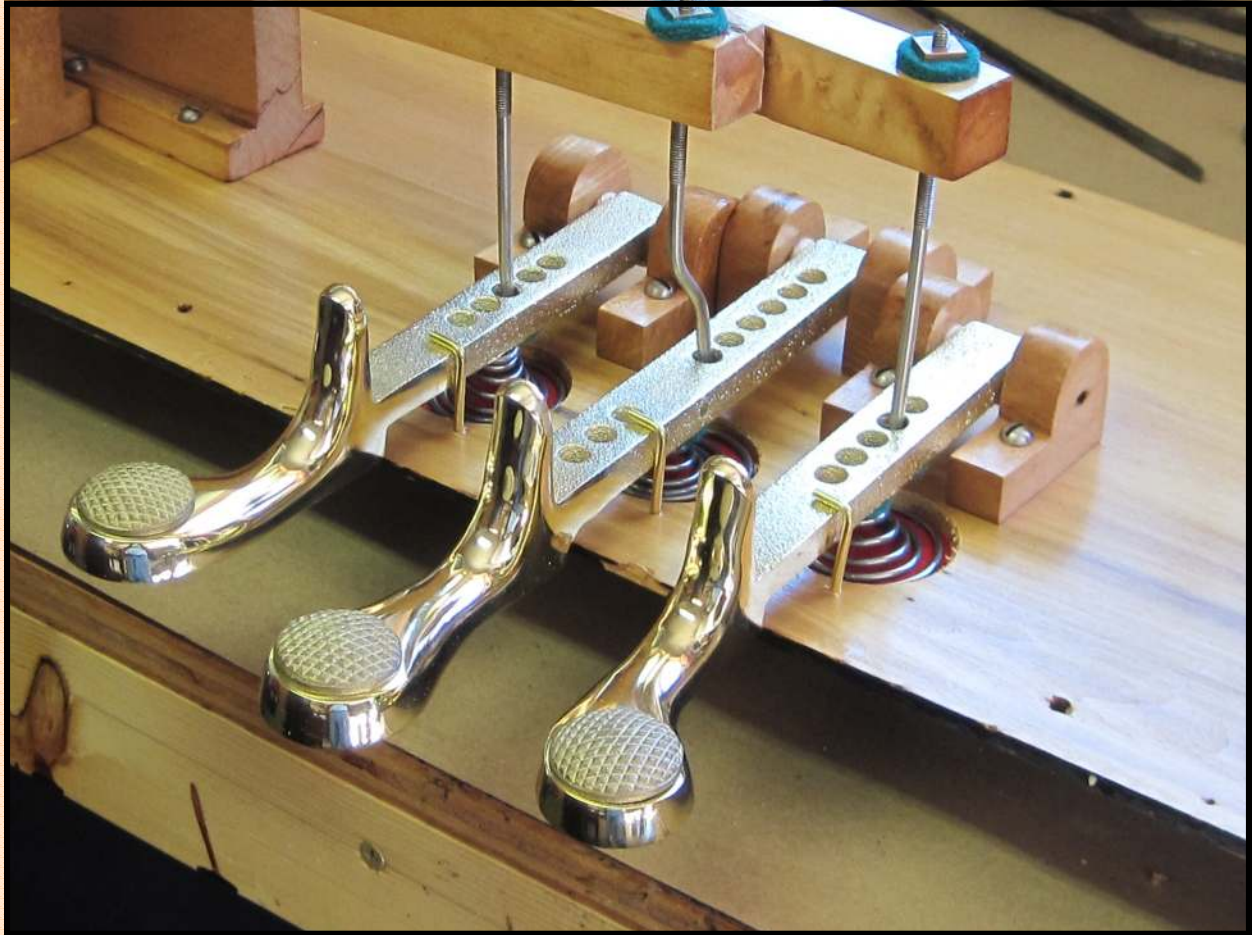


Schaff Piano Supply Company Presents:

# Upright Pedal Mechanism Transformations

## Basic Step-by-Step Procedures



Action Work

By Chuck Behm

## Upright Pedal Mechanism Transformations



### -Rationale-

In restoring a vintage upright, the question often arises about what to do with the pedal mechanism. More often than not the trapwork is in a neglected condition and needs repair or even a thorough restoration. Pedal brackets are frequently shot, and springs are often weak or broken and need replacement or bolstering. The pedals themselves are sometimes broken or in such bad condition (see above photo) that no amount of polishing will make much of a difference.

How much time and effort to invest in working on the pedal mechanism of an older upright piano depends not only upon its condition but also upon the nature of the work being done on the piano. If a routine overhaul is the order of the day, simply fixing the pedals to work might be all that is recommended. If, on the other hand, the instrument is being restored to "like new" specifications, transforming a neglected and inoperative mechanism such as the one shown in the above photo to the condition shown on the cover for this article can be a challenging adventure. This article focuses on examples of the types of methods and materials which might be used to effect such a transformation.

## Action / Upright Pedal Mechanism Transformations



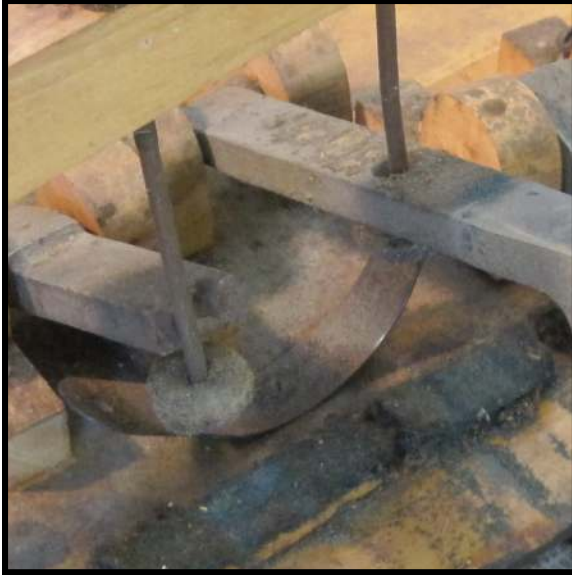
### Before you begin . . .

For any job involving the pedals and the trapwork (pedal linkage), it is essential to assess the situation carefully to determine a recommended course of action. In some cases, extreme measures will be called for, as in the example of the piano featured in this article. In other situations, far less work will be needed.

**The condition of the pedals will first need to be considered.** Are they salvageable? Some pedals are solid brass and merely need a thorough cleaning and polishing to revive their beauty. Other pedals will be plated with brass or nickel, and will have worn to the point where to do the job right, a professional replating (a job that is outsourced by many shops) will be an option to consider. In still other cases the pedals would be best replaced. In the piano serving as the subject for this article one pedal was broken with the front half completely gone. The other two pedals were badly worn. There was no practical point to trying to save the set. Instead, a set of high quality brass pedals from Schaff was selected to replace the original pedals.



## Action / Upright Pedal Mechanism Transformations



The various springs and related hardware used in the trapwork also need to be examined carefully. Are any springs broken or severely weakened? Are the springs held down securely or are there stripped screws needing to be reset? In the case of the trapwork featured here, the springs were not adequate, and needed improvement. On the sustain pedal, the trap lever spring seemed weak. For the other two pedals, a trapspring had been used in a unusual way to provide extra lift for two pedals at once, and needed replacement.

**Pedal brackets need to be looked over carefully to determine the amount of wear.** Brackets may need to be rebushed or replaced. In the case of the featured piano, the brackets themselves were maple and in good condition. The screws holding the brackets down, however, were driven into holes that were either stripped, or close to it. The decision was made to refinish the existing brackets, and then reset the screws by installing hardwood dowels with new pilot hole drilled.



**Finally, the felt used to cushion the trap work needs to be inspected.** Outright replacement is ordinarily called for, especially if there is excessive wear (indicated by hardness or flatness of the felt), or if there is any indication of insect or mouse damage. In the case of the featured piano, all indications were that the felt used to cushion the pedals was not factory, in that it was doubled up in places and roughly cut. Besides that, there was both excessive wear and insect damage in evidence. Replacement was obviously the order of the day.

## Action / Upright Pedal Mechanism Transformations

### One additional thought . . .

As mentioned already, when it comes to pedals and trapwork, different pianos will require different courses of action. The majority of pictures used for this article illustrate an extreme state of disrepair that is unusual to say the least. In the majority of cases far less work will be needed to bring the pedal mechanism back to good condition. The steps shown in this article are therefore to be thought of as what might be done in a severe case, but definitely not what needs to be done in every case. The pedal mechanism shown in the photo on this page, for example, reveals a very straight forward set-up that needs cleaning and lubrication, but nothing else.



Pedal mechanisms (particularly in upright pianos) truly come in many shapes and forms. Some set-ups will become familiar to the technician, in that they are seen often. Others times contraptions will be used which are unique to the particular brand and may be seen only once in a blue moon. The job of repairing poorly operating pedal mechanisms on vintage pianos can therefore be an interesting and challenging assignment for the technician.

With those assertions made, the description of the work done on the example piano will proceed. Keep in mind at all time that the procedures described in this article fit this particular piano, but not necessarily the piano which you have in front of you.



## Action / Upright Pedal Mechanism Transformations



**Step 1:** If a serious restoration of the pedal mechanism is in the works, the removal of the pedal board with the attached pedals and trapwork will help facilitate the process. Tilt the piano onto its back using a [shop repair truck](#) (Cat. No. 1901).

***Note:** This tool, by the way, is a work-horse piece of equipment which will come in handy time and time again. Well worth the investment for anyone serious about restoration work!*



**Step 2:** Clear a bench top to locate the pedal board during the course of repairs. A careful inspection to determine what parts may be salvaged and what parts need replacing is the first order of business. **If a new set of pedals are needed, now is the time to put in the order to Schaff so that the pedals are on hand when the time comes to install them. If pedals are ordered, check catalog specifications to ensure a proper fit.** [Schaff carries a wide selection of upright pedals to chose from!](#)



### TAKE NOTE!

**Step 3:** Before beginning disassembly in earnest, take digital photographs of all important mechanism and linkages. Load all photos onto a file for the piano on your computer for later retrieval. These photos will oftentimes be a life-saver down the road, when things are going back together again!

### TAKE NOTE!

## Action / Upright Pedal Mechanism Transformations



**Step 4:** If nothing more than a thorough cleaning of the pedal mechanism is called for, everything might be left in its assembled condition. If, on the other hand, a more thorough restoration is required, taking the time to remove pedal brackets, pedals, trapwork mounts and levers, springs and all related hardware may simplify the job in the long run.

***Hint:** Check as you go for stripped or loose screws. If any screws holes questionable, fixing all of them would be a repair that would be recommended.*



**Step 5:** When removing screws and hardware from the trapwork, properly label and store all items. A old muffin tin is an ideal place to store such items.



***Note:** For maximum cleaning and/or refinishing, continue disassembly until you've reached the stage illustrated on the left. It is obvious that trying to clean around the brackets and mounts would be much more difficult in this situation than simply cleaning the uncluttered pedal board minus all hardware as shown.*



## Action / Upright Pedal Mechanism Transformations



**Step 6:** With any parts for which there are multiples, number them in a spot that will be evident later. While it may not cause problems to interchange parts, it is always safer to simply return each part to its original spot.



**Step 7:** To refinish the bottom board (if that step seems necessary) first remove the old finish by scraping with a chisel. The most effective method is to bear down on the chisel as you drag it towards you over the old finish. The beveled edge of the chisel should be away from you, while the blade is tipped slightly in towards you as shown.

***Hint:** Before going to this extreme, try a simple cleaning with a product such as Mr. Clean. It might be enough!*



**Step 8:** Continue scraping until the bulk of the old finish has been removed. While chemical strippers may be used for this step, using a chisel to do the job is usually pretty simple, in that the old finish is often shellac and is easily scraped off.



## Action / Upright Pedal Mechanism Transformations



**Step 9:** With the bulk of the finish removed, switch to sandpaper to complete the job. Here, a hand sander is used with 60 grit paper on an initial pass over the bottom board to remove the remainder of the old shellac.



**Step 10:** Continue sanding by going through several finer grits (100, 150 and 220 are recommended) until a smooth board without discolorations is produced.



**Step 11:** Decide on a course of action for the bracket screw holes. Plugging with [shoe pegs \(Cat. No. 6050\)](#) and a touch of [Titebond glue \(Cat. No. 392-1\)](#) may be all that is necessary. However, for a more reliable fix, drilling out the old holes, inserting hardwood dowels, and drilling new tap holes (which will be discussed) is the preferred method.

## Action / Upright Pedal Mechanism Transformations



**Step 12:** If the decision is made to drill and plug the screw holes for either the bracket hardware or any other of the trapwork mechanisms, an accurate template of the exact position of the existing screw holes should first be made. Cut a piece of contractor's paper to cover the bottom board, and secure it on one end by tacking it firmly in place.



**Step 13:** Unroll the contractor's paper so that it smoothly covers the board with no wrinkles.



**Step 14:** The existing screw holes may be located by feel. (Or, simply lift one end of the contractor's paper to visually identify the location of the holes.) Once located, use the flat edge of a carpenter's pencil to mark the location of each hole.



## Action / Upright Pedal Mechanism Transformations

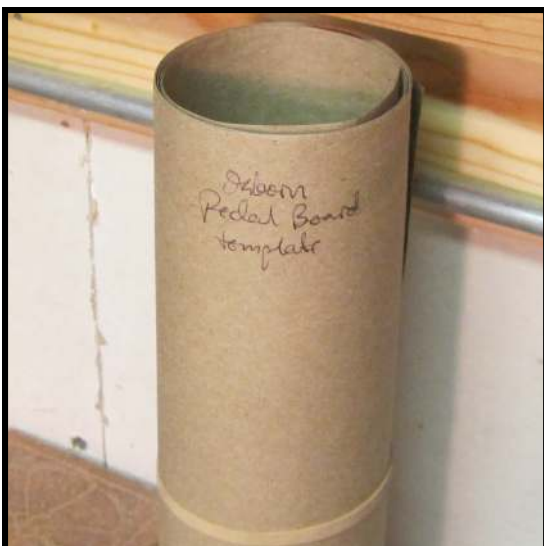


**Step 15:** To pinpoint the center of each hole, use the pointed end of a [scratch awl \(Cat. No. MF-365\)](#) to pierce the paper for each hole.



**Step 16:** Once all the holes have been marked (double check to make sure you haven't missed any), roll the paper up and remove the tacks.

***Suggested precaution:*** Mark the tack holes by X'ing them with a Sharpie. The location of the tacks will be needed later when things are going back together again.



**Step 17:** Label the roll of paper and set off to one side for the time being in a secure location.

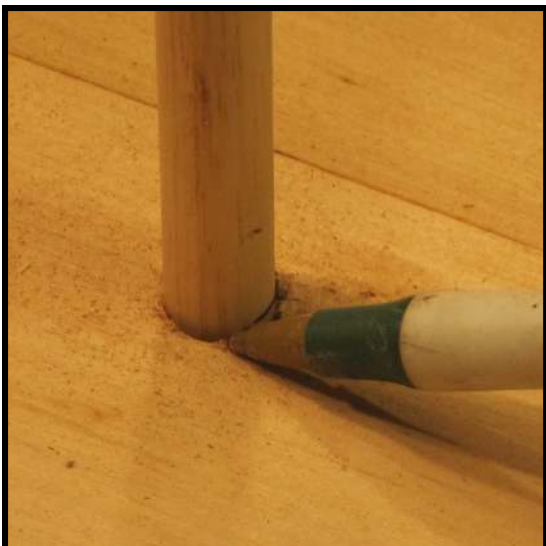
## Action / Upright Pedal Mechanism Transformations



**Step 18:** Before drilling the holes for the dowels, set your drill press so that the depth of the hole will be nearly all the way through the bottom board, with just enough of the tip of the drill emerging so that excess glue has a place to escape. Select a size of drill to match whatever size of dowel you plan to plug the holes with. In this case a 1/4" bit was used to drill for a 1/4" dowel.



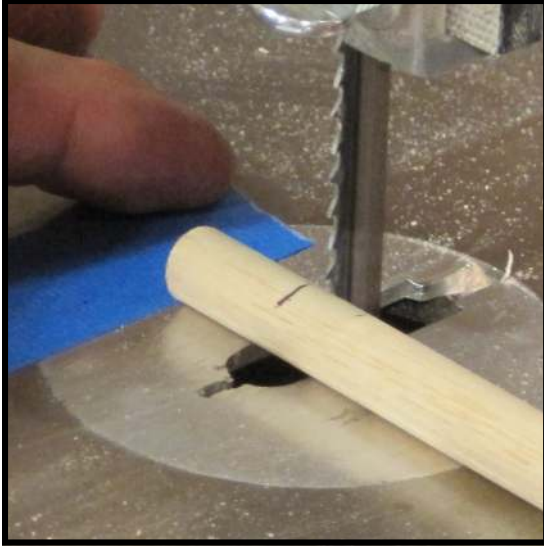
**Step 19:** Drill out each hole to the complete depth that the gauge has been set to.



**Step 20:** Insert the dowel to be used into a sample hole, and mark the depth with a pencil or pen.



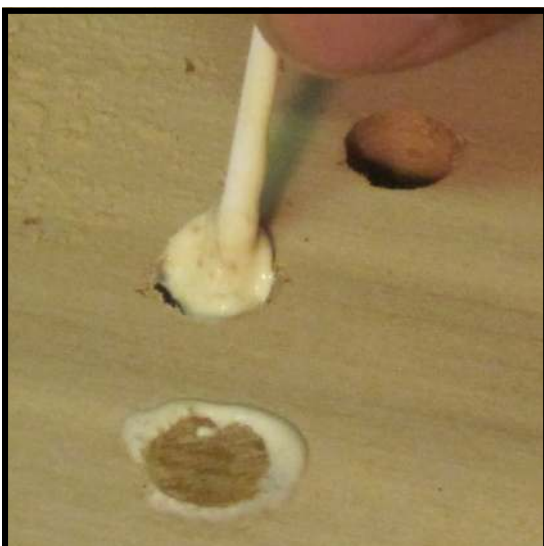
## Action / Upright Pedal Mechanism Transformations



**Step 21:** To make cutting the lengths of dowel easier, apply a piece of masking tape to the bed of the saw to be used. Line up the blade slightly to the side of the line on the waste side of the cut. For this short of a piece of dowel, a band saw or scroll saw is probably the easiest saw to use.



***Hint:*** Cut all the dowel segments needed at one time to avoid running back and forth between the saw and the bench.



**Step 22:** Swab the each hole generously with Titebond using a Q-Tip.

## Action / Upright Pedal Mechanism Transformations



**Step 23:** With dowels that are a tight fit use a [ball-peen hammer](#), (Cat. No. MF-1916) to tap each dowel in.



**Step 24:** Allow the glue to set for at least an hour or two before proceeding.



**Step 25:** Once the glue has dried adequately, shave the excess off with a sharpened chisel from your [chisel set](#) (Cat. No. 292).



## Action / Upright Pedal Mechanism Transformations



**Alternative repair method:** For those who don't want to be bothered with chiseling a number of dowels try running the pedal board through a thickness planer adjusted to just skim over the top of the board and plane the excess wood from the tops of the dowels.



**Step 26:** Once the dowels have been trimmed flush, lightly sand with 150 grit paper, followed by 220 grit paper.

**Caution:** *Avoid sanding the excess length of the dowels without trimming them flush to the pedal board first. Doing so will result in the softer wood of the pedal board dishing out around the harder wood of the dowels, leaving the surface uneven and unsuitable for mounting brackets.*



**Shown at left:** *The completed inserts, ready for retapping.*

## Action / Upright Pedal Mechanism Transformations



**Step 27:** Apply a topcoat to the pedal board. Shellac is an ideal finish in that it dries quickly enough that 3 coats may be applied in the space of a single morning or afternoon. .



**Step 28:** If the old pedal brackets are to be retained, now is the time to focus attention to their condition. The brackets for this particular piano were good quality maple, filthy dirty, but otherwise in very useable condition. A thorough cleaning and sanding, followed by an application of 3 coats of shellac, was decided upon.



***Note:** In the case of certain metal pedal brackets such as those shown on the right from a different piano, a simple wire brushing followed by a protective coat of sprayed-on [clear lacquer \(Cat. No. 1438\)](#) is all that may be needed to bring the hardware back into like-new condition.*



## Action / Upright Pedal Mechanism Transformations



*In some cases where the condition of the original brackets has deteriorated to the point where repair would be difficult or impossible, replacement might be a better option. These heavy duty [pedal brackets](#) (Cat. No. 2582) are replacements for brackets that don't use the fluted pedal pin.*



*Other replacement brackets available include the [steel pedal brackets](#) (Cat. No. 2587) in the photo on the left, the brass finished steel [pedal brackets](#) (Cat. No. 2589) on the upper right, and the [nylon pedal brackets](#) (Cat. No. 2590), on the lower right.*



*While on the topic of pedal hardware, one final item recommended for your inventory of parts on hand would be a supply of [fluted pedal pins](#) (Cat. No. 2584).*



## Action / Upright Pedal Mechanism Transformations



**Step 29:** After cleaning and sanding, all wooden parts should be given three coats of shellac for protection.



**Step 30:** With all the wooden parts re-finished, the original location of the screw holes should be marked. Retrieve the template produced earlier, and tack it to the pedal board, using the same holes as before.

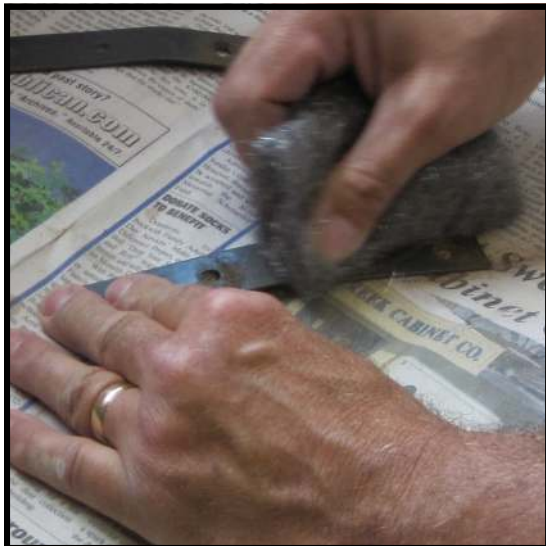


**Step 31:** Use a punch or scratch awl to tap in the location of the screw holes.

## Action / Upright Pedal Mechanism Transformations



**Step 32:** For brackets and trapwork mounts which are to go back to the same location as they were originally found, drill the appropriate size of pilot hole for each screw. (These screw holes are being drilled on a diagonal to match the original slant of the screws.)



**Step 33:** With the pedal board itself prepared and ready to receive brackets and mountings once again, one's attention should be turned to the components of the trapwork mechanism. To begin with, trap lever springs which have minor corrosion may be cleaned and treated to prevent further damage. First clean off all rust and residue with [Grade 2 \(medium coarse\) steel wool](#) (Cat. No. 412-2).



**Step 34:** A particularly good protective coating for metal springs and other similar hardware is [Nu-Blue](#) (Cat. No. 438), sold specifically for coating old tuning pins, but very functional for this use as well. Apply with a soft brush..

**Caution:** *Be sure to wear latex or rubber gloves when working with this product. It will temporarily discolor your skin if contact is made.*

## Action / Upright Pedal Mechanism Transformations



***Note:** Nu-Blue Tuning Pin Blue is a handy product to have around for an protecting out-of-the-way metal surfaces that have a tendency towards corrosion.*



**Step 35:** Once any springs or other similar hardware have been thus treated, hang them to dry. Here a [grand let off rack](#) (Cat. No. 999) does double duty as a convenient hang bar for small items. (Hooks sold separately).



**Step 36:** When the treated springs or hardware is dry reassemble the trapwork mechanism before remounting on the pedal board.



## Action / Upright Pedal Mechanism Transformations



**Step 37:** If any of the screws in the trapwork mechanism seem loose, inserting a shoe peg with a drop of Titebond glue is a good idea. Insert the pegs into the offending holes (or simply do them all) and snip off any excess length. A pair of [Maxi-Shear flush cutters](#) (Cat. No. 215) work nicely for this job.



***Hint:** Attaching the trapwork spring to the underside of the trapwork lever is facilitated by placing the lever lengthwise in a vise.*



**Step 38:** With the trapwork lever mechanisms reassembled, screw them down temporarily to check functionality, then remove again (if necessary for upcoming steps) for the time being.

***Caution:** Though this may seem like some to be a wasted step which might be tempting to skip, it is always prudent to test one component of a system before starting in work on the next.*

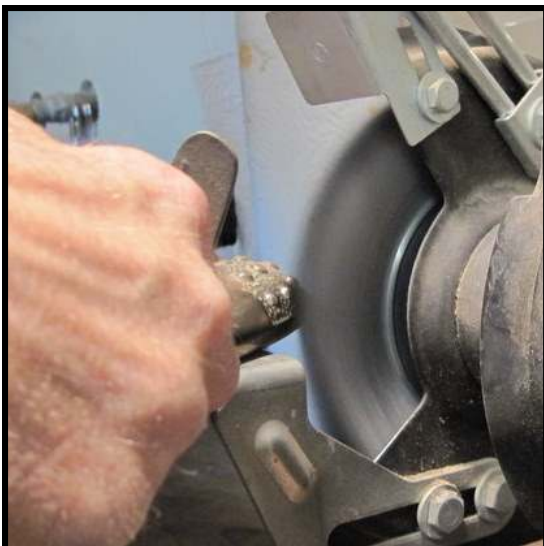
## Action / Upright Pedal Mechanism Transformations



**Step 39:** At this time, either unbox your new set of pedals from Schaff, or get to work on the original pedals to bring them back to life.



***Note:** Some pedals show potential for restoration, while others don't. This set of pedals from another piano is a prime example of a situation where new pedals are not necessarily called for. These have a lot of potential.*



*In this case a simple buffing on a fine wire wheel, followed by a protective coating of spray lacquer was all that was needed to bring the original pedals back to life.*



## Action / Upright Pedal Mechanism Transformations



*With the nickel plating thoroughly cleaned, the sprayed-on lacquer finish brings out the original beauty of the pedals.*



*Placed side-by-side with more of a plain Jane type of pedal, it is obvious that there is a real difference in quality between pedals. Whether to restore or to replace hinges on this difference.*



*A set of pedals such as these, on the other hand, begs the question, "Why bother?" Even if sent off for replating, the pedals would still be non-descript. A new set of pedals from Schaff in this case would make a world of difference to the appearance of the piano!*



## Action / Upright Pedal Mechanism Transformations

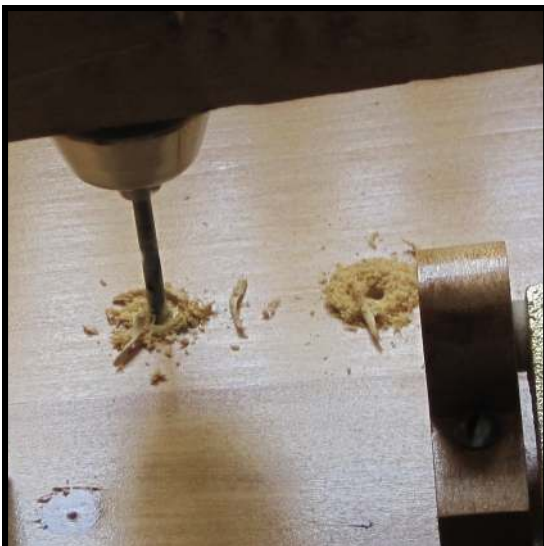


**Step 40:** If either new pedals or new brackets (or both) are being used, the position of the brackets may be different from the original positioning. Using the original location for screws as a starting point, scratch in a reference line with your scratch awl and a [tempered steel rule \(Cat. No. 3197\)](#) for a short distance front to back to use in finding the correct point for drilling for new holes.



**Step 41:** Using this guideline for reference, slide the ready-to-install pedal and bracket assembly back and forth until the correct positioning is achieved. At that point mark the new holes for drilling, using the bracket itself as the template.

***Note:** Here, although new pedals were being used, the screw hole location turned out to be identical to the old set-up. In other situations, the holes might be forwards or backwards from the originals.*

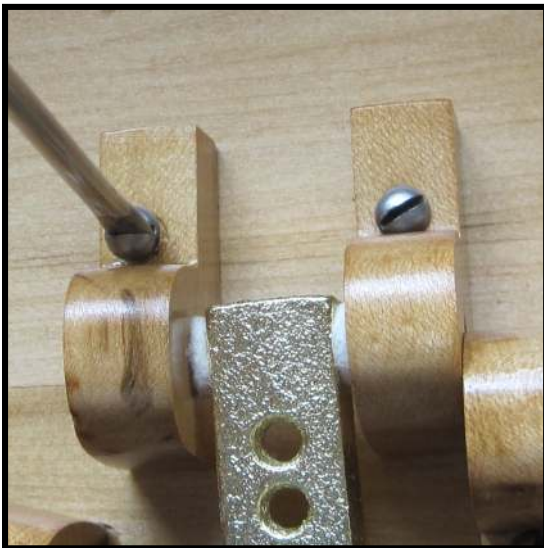


**Step 42:** Having verified the position for the brackets, drill the new pilot holes using the correct sized bit.

## Action / Upright Pedal Mechanism Transformations



**Step 43:** Balance rail punchings (Cat. No. 332 C) work well on the pedal pin as bushings.



**Step 44:** Install the pedal brackets and pedals in place.



**Step 45:** Old springs are often broken or weakened with age and need attention. In the case of the example piano, the trap lever springs functioned, but seemed weak. An added spring which assisted the left and center pedal was probably not factory (see page 4). Conical springs (Cat. No. 586) were decided upon as an easy-to-install supplement to bolster spring strength. The location where the springs should be installed was here determined by positioning the springs under the pedals.



## Action / Upright Pedal Mechanism Transformations



**Step 46:** Use your scratch awl to mark a center point for each of the conical springs.



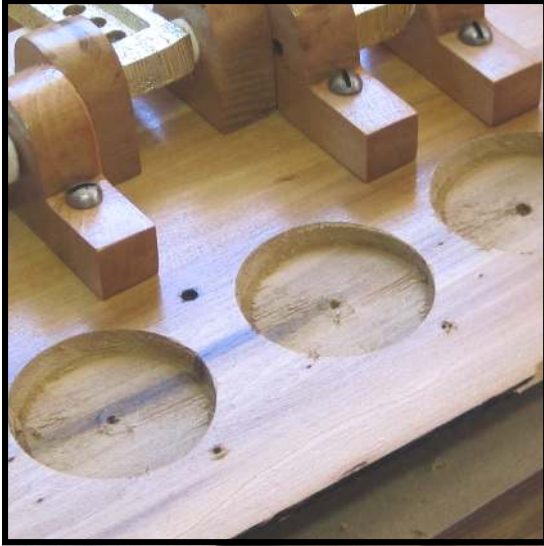
**Step 47:** Drill a shallow well for each conical spring with a 1 3/4" Forstner bit.



Note: Oftentimes sets of Forstner bits are sold with a 1 5/8" bit and a 2" bit, but not the in between 1 3/4" size. The smaller 1 5/8" bit will drill a hole that the spring will fit into, but it will be too tight and the spring will click each time the it is depressed, as the first two coils of the spring slide by each other. The slightly larger 1 3/4" bit will produce a hole with a slightly more relaxed fit, allowing the spring to compress in upon itself without any clicking noise.



## Action / Upright Pedal Mechanism Transformations

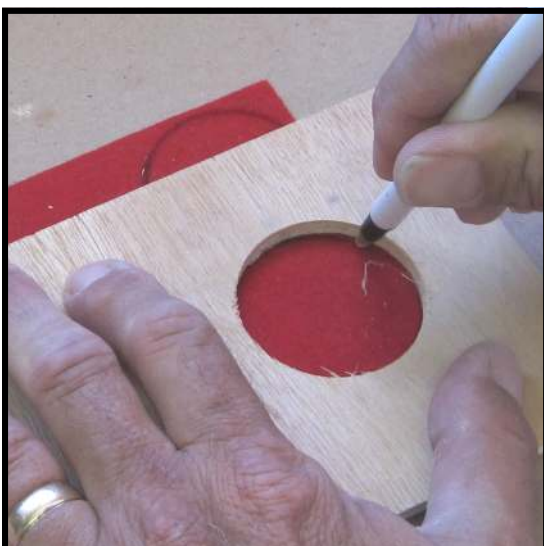


**Step 48:** Pivot the pedals back and out of the way for the time being while a cushion for the conical springs is prepared by lining the bottoms of the wells with felt. This will help ensure silent operation.



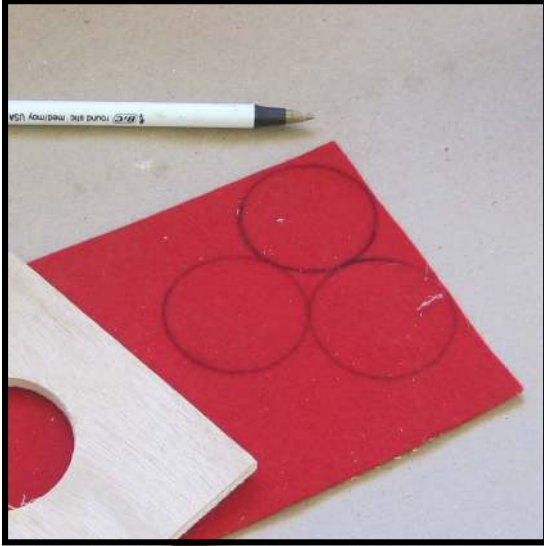
***Hint:** An easy to make template for perfectly sized felt discs may be made by using the 1 3/4" Forstner bit to cut a hole in a thin piece of stock.*

***Caution:** Use a large enough piece of stock to maintain a firm grip on the wood scrap while using the Forstner bit; otherwise the piece may begin to spin as the oversized bit bites into the wood.*



**Step 49:** Use a ballpoint pen to mark three discs for cutting on a sheet of felt. [Understring cloth \(Cat. No. 302R\)](#) works well for this purpose.

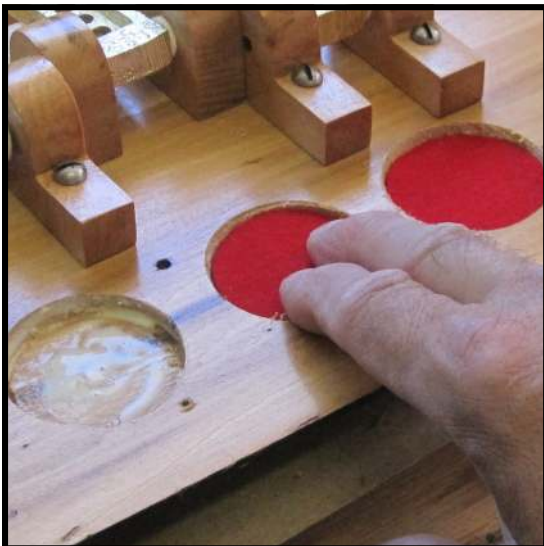
## Action / Upright Pedal Mechanism Transformations



**Hint:** By drawing the discs as shown, a minimal amount of felt will be used.



**Step 50:** Cut the felt discs using a pair of [curved-nose scissors \(Cat. No. 164\)](#).



**Step 51:** Use Titeond glue to affix the felt discs to the bottom of the spring wells.

## Action / Upright Pedal Mechanism Transformations



**Step 52:** Flip the pedals back into place, and check alignment with the springs. As a last precaution to prevent noise, a [front rail punching \(Cat. No. 337E\)](#) may be inserted in between the top of the spring and the underside of the pedal. Glue in place to the underside of the pedal with Titebond.



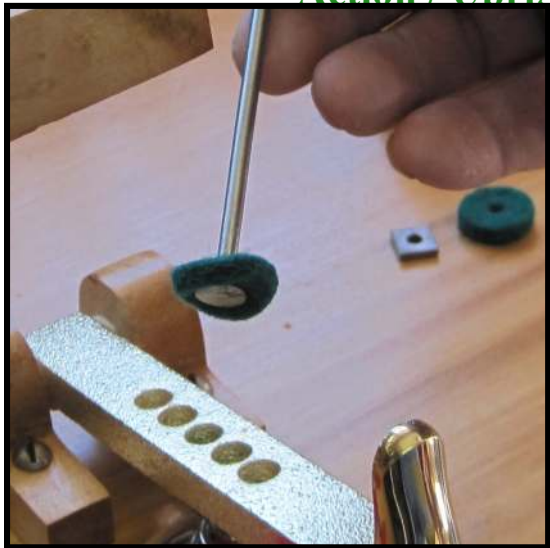
**Step 53:** With the pedals in place, screw the trapwork mechanism down once again to the pedal board.



**Step 54:** Align the trapwork mechanism with the pedal by eyeballing down through the hole in the trapwork lever to find the nearest hole in the pedal.



## Action / Unright Pedal Mechanism Transformations



**Step 55:** Slip a front rail punching over the threaded end of the pedal prop.



**Step 56:** Place the pedal prop for each pedal through the hole which most closely aligns with the hole at the end of the trapwork lever.

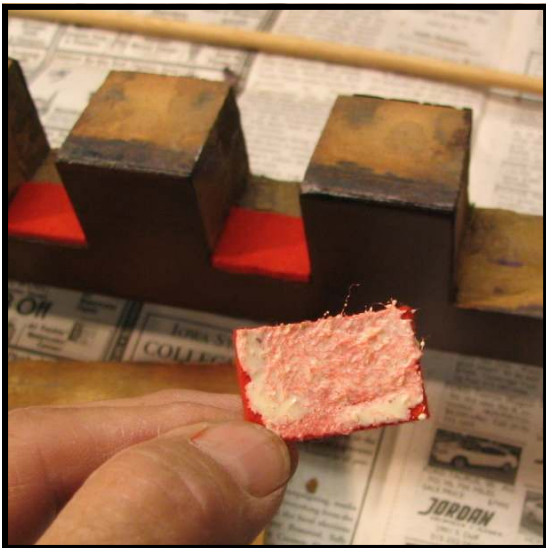


**Step 57:** Put the threaded end of the prop through the trapwork lever, use one more front rail punching for a cushion, and finish with either a square nut or wing nut.

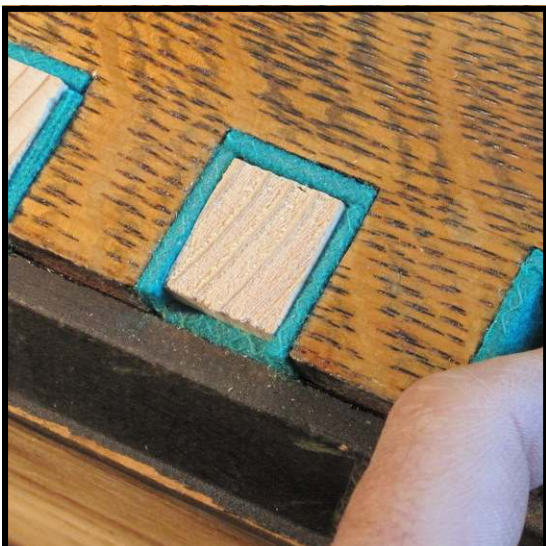
## Action / Upright Pedal Mechanism Transformations



**Step 58:** To add the finishing touch to a pedal restoration job, the toerail may be removed for easy replacement of the felt around the notches for the pedals.



**Step 59:** Measure and cut the felt with a razor or [Hale Felt Cutter \(Cat. No. 279\)](#) for the top of the notches first. Finish the job by butting the side pieces up under the top piece. Chose a felt that is thick enough to feel snug against the pedals without binding.



**Step 60:** Use custom cut wooden cauls to ensure proper drying.

## Action / Upright Pedal Mechanism Transformations



### Much improved . . .

Restoration of a dilapidated pedal mechanism of an upright can be quite a challenging adventure. So many variations on a theme exist that one never quite knows what problems will present themselves when tackling such a job.

The key is to have the idea in mind that the end result will be both a joy to look at and to play. Deciding what parts may be cleaned or restored and what parts need replacement is a necessary first step. Taking the process from conception to completion without compromising the vision one holds within is what sets the craftsman apart from the amateur.

For this particular set of instructions, keep in mind that this is merely meant to be an example of the type of repair that may be accomplished when restoring a pedal mechanism. Since so many different types of systems exist that covering every possible contingency would be an exercise in futility.

With all your restoration work, please keep Schaff Piano Supply in mind for your tool and supply needs.

Chuck Behm



## Action / Upright Pedal Mechanism Transformations

### Tools and Supplies:

For your convenience, all the tools and supplies necessary to complete this procedure are listed with corresponding catalog numbers.

#### Tools:

Shop repair truck.....	Cat. No. 1901
Scratch awl.....	Cat. No. MF-365
Ball peen hammer.....	Cat. No MF-1916
Chisel set.....	Cat. No. 292
Grand let-off rack.....	Cat. No. 999
Maxi-Shear flush cutters.....	Cat. No. 215
Tempered steel rule.....	Cat. No. 3197
Curved-nose scissors.....	Cat. No. 164
Hale Felt Cutter.....	Cat. No. 279

#### Supplies:

Upright pedals.....	Cat. No. 1570, 1571, 1573, 1575, 1576, 1577, 1579, 1580, 1581, 1582, 1583, 1584, 1585, 1586, 1589, 1593 and 1599 (see catalog for pictures of pedals)
Shoe pegs.....	Cat. No. 6050
Titebond glue.....	Cat. No. 392-1
Clear lacquer.....	Cat. No. 1438
Pedal brackets.....	Cat. No. 2582, 2587, 2589, and 2590
Fluted pedal pins.....	Cat. No. 2584
Grade 2 steel wool.....	Cat. No. 412-2
Nu-Blue.....	Cat. No. 438
Balance rail punchings.....	Cat. No. 332C
Conical springs.....	Cat. No. 586
Understring cloth.....	Cat. No. 302R
Front rail punchings.....	Cat. No. 337E

To order, call Schaff Piano Supply at 1-800-747-4266,  
or go on-line at <http://www.schaffpiano.com/>